

# PHILCO

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## PHONOGRAPH SERVICE DATA

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the World Over

### RECORD CHANGER MODEL M-60 (BSR-U.A.-14) AND M-60A (BSR-U.A.-24)

#### ADJUSTMENTS

**Needle Set-Down** — Place a stack of 10" records on the turn table, adjust the needle adjusting screw (140) so that it falls about 1/8" from the edge of the records. When correctly positioned for a 10" record, the 12" and 7" needle set down will also be correct.

**Tone Arm Height** — To raise the height of the tone arm, turn the tone arm height adjusting screw (143) clockwise, and to lower it counterclockwise. The tone arm height should be adjusted so that when a stack of 10 average thickness records is on the turntable, the point of the needle clears the top record by 1/8".

**Needle Pressure** — Adjusting of needle pressure may be made by repositioning the tone arm balance spring (144) in the various adjustment holes provided, See Figure 2, until the correct pressure is obtained. Proper pressure is between 6 and 8 grams.

**Adjusting of Speed Change** —

1. Remove turntable
2. Set the speed change lever to 33 RPM.
3. Using screwdriver slot provided in idler arm pivot (35) adjust the height of the idler pulley until it is just below the first shoulder of the motor spindle. Turn the idler arm pivot clockwise to lower and counterclockwise to raise it.
4. Replace the turntable.

#### LUBRICATION

The record changer mechanism is well lubricated before leaving the factory; however, after prolonged use, it is advisable to re-lubricate certain parts as follows:

A medium grease should be applied to the following points:

The raising shoe (36)  
Idler arm pivot (35)  
Operating plate operating surfaces  
Gear teeth

A medium oil should be applied at the following points:

The tone arm hinge pivots  
The tone arm raising spindle bearings  
Turntable bearing

A light oil should be applied to the following points:

Idler pulley spindle (44)

**CAUTION:** Do Not get oil on the pulley wheel or on the inside of the turntable rim.

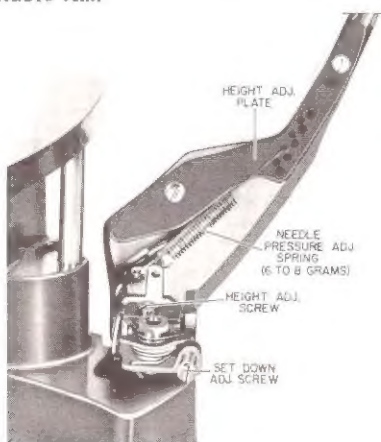


FIGURE 2. TONE ARM ADJUSTMENTS



FIGURE 1. MODEL M-60 RECORD CHANGER

#### TURNTABLE REMOVAL

1. Lift the record support arm and move fully to the right.
2. Press down on plastic disc in the center of the turntable and twist it clockwise. Lift straight up to remove.
3. Remove "C" washer at very bottom of spindle. Turntable is now free to be removed.
4. To replace turntable, reverse the above procedure.

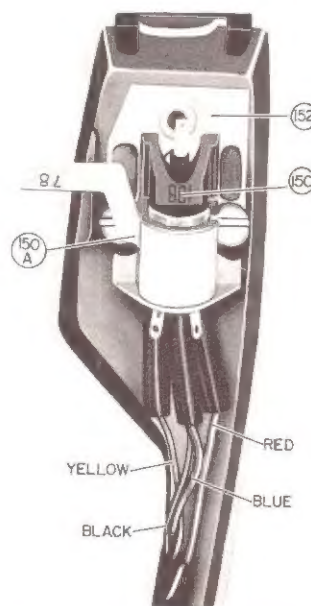


FIGURE 3. TONE ARM CARTRIDGE ASSEMBLY

AUTOMATIC RECORD CHANGER MODEL M-60 AND M-60A

PR-3704

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## REPLACEMENT PARTS LIST — MODEL M-60

Item No.	Description	Part No.
1	Center Spindle Assy.	325-0125-1
2	Turntable Center Dish Assy.	325-0125-2
3	Turntable Mat	325-0125-3
4	Turntable Assy.	325-0125-4
5	Thrust Washer	325-0125-5
6	Ball Race Assy.	325-0125-6
7	Thrust Washer	325-0125-5
8	Damping Washer	325-0125-8
9	"C" Washer	325-0125-11
10	Mainplate Riveting Assy.	325-0125-105
11	Cam Gear Final Assy.	325-0125-14
12	"C" Washer	325-0125-12
13	Actuating Pawl Assy.	325-0125-13
14	"C" Washer	325-0125-19
15	Reject Knob Escutcheon	325-0125-16
16	Speed change knob escutcheon	325-0125-17
17	Escutcheon pin	325-0125-18
18	"C" Washer	325-0125-19
19	Transit Screw	325-0125-20
20	Transit bushing	325-0125-21
21	Retaining Clip	325-0125-22
22	Knob (speed change)	325-0125-23
23	Speed change lever Assy.	325-0125-24
24	Knob, spindle	325-0125-25
25	"C" Washer	325-0125-26
26	Screw	*
27	"C" Washer	325-0125-11
28	Clip (hair pin)	325-0125-28
29	"C" Washer	325-0125-29
30	Speed change slide	325-0125-30
31	Washer (raising pillar)	325-0125-31
32	Raising Pillar	325-0125-32
33	Spring (speed change slide)	325-0125-33
34	"C" Washer	325-0125-34
35	Idler Arm Pivot	325-0125-35
36	Raising Shoe	325-0125-36
37	Raising Shoe Spacer	325-0125-37
38	Raising Bracket	325-0125-38
39	Spring (raising pillar)	325-0125-39
40	Idler pulley spindle washer	325-0125-40
41	Idler Pully Assy.	325-0125-41
42	"C" Washer	325-0125-11
43	Idler pulley spindle washer	325-0125-43
44	Idler pulley spindle	325-0125-44
45	Idler Arm	325-0125-45
46	Idler Arm Assy.	325-0125-46
47	Switch Box Assy.	325-0125-79
48	Support plate	325-0125-48
49	Retaining Clip	325-0125-49
50	Spring Mtg. Cup	325-0125-50
51	Spring Mtg.	325-0125-51
52	Spring Mtg. Cup	325-0125-50
53	Spring Mtg.	325-0125-51
54	Washer (motor mtg.)	325-0125-54
55	Rubber Mount	325-0125-55
56	Motor Shield	Pt. of Main Assy.
57	"C" Washer	325-0125-11
58	Motor Assy.	325-0125-58
59	Motor Coil	Pt. of Main Assy.
60	Toggle Assy.	325-0125-61
61	"C" Washer	325-0125-62
62	Fiber Washer	325-0125-63
63	Operating plate final Assy.	325-0125-65
64	Retaining Clip	325-0125-64
65	Spring (operating plate)	325-0125-67
66	Washer	Pt. of Main Assy.
67	Screw 4-24 x 5/16	*
68	Actuating slide Assy.	325-0125-69
69	Spring (actuating slide)	325-0125-70
70	Transfer Lever Assy.	325-0125-71
71	Washer (transfer lever)	325-0125-72
72	Mounting Clip	W-2564-9
73	Actuating Slide Spacer	325-0125-73
74	Screw, 4-24 x 5/16"	*
75	"C" Washer	325-0125-62

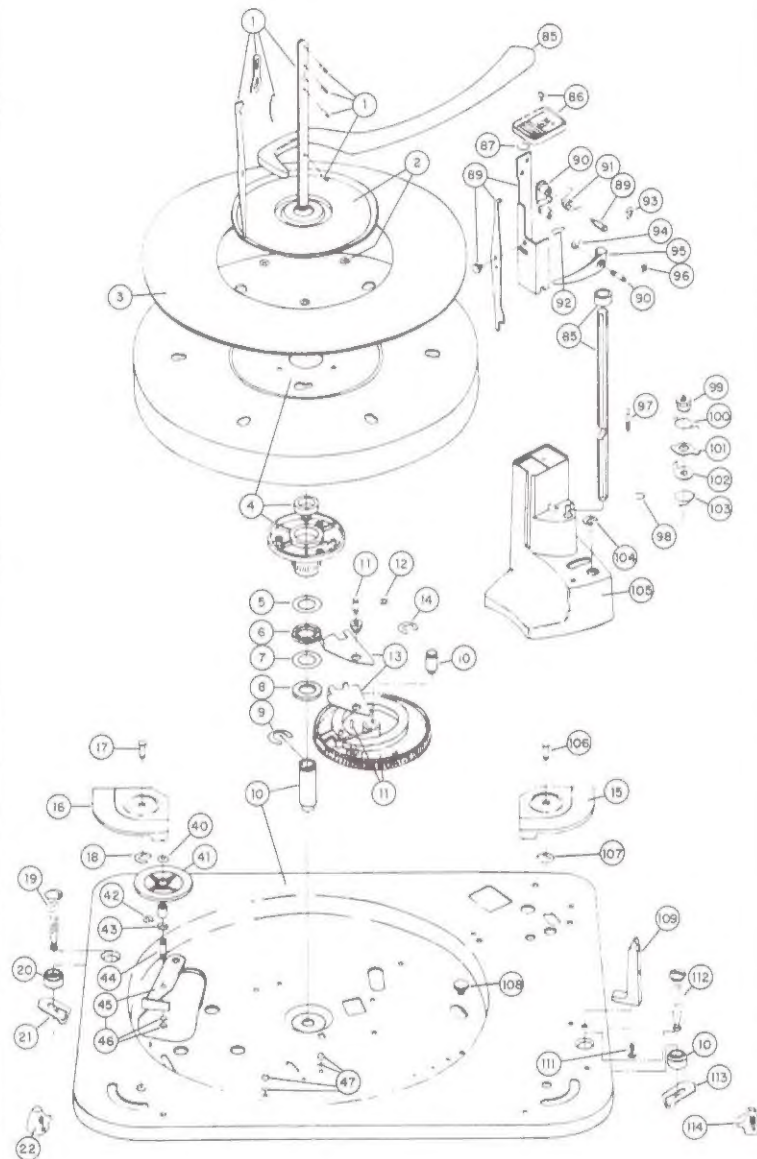


FIGURE 4. COMPONENT BREAKDOWN  
ABOVE BASEPLATE

\* Standard Screws - Not Stocked  
As A Replacement Item.



## TROUBLE SHOOTING CHART (Continued)

Symptom	Possible Correction
9. Tone arm does not set down on record properly.	(a) See tone arm adjustments, Page 1.
10. Tone arm does not track correctly across record.	(a) Cartridge may be clogged with dirt or needle may be worn. (b) Check to see that changer is level. (c) Binding of the tone arm spindle (Part of quadrant assy.). (d) Check needle pressure (6 to 8 grams). (e) The actuating slide (68) may be sticking.
11. Tone arm remains in last groove at end of cycle.	(a) Check that cartridge pressure is correct (see adjustments). (b) Check that all moving parts and bearing surfaces of the tone arm spindle assy. are free and lightly oiled. (c) Faulty actuating pawl (13) and friction link (13). If the pawl does not move freely with the link it will not engage the turntable boss (4) to start the cycle. If the assy. sticks, remove assy., clean and lightly oil pawl bush (13).
12. Changer does not shut off after last record has been played. Tone arm continues to play last record from 7" position.	(a) Control arm (85) not dropping. Make sure that control arm is in the operating position and drops freely. If necessary, oil spindle (85). (b) Control lever (126) and cut-off lever (127) may be overlapping. Make sure that the levers are flat and contact edge to edge only.
13. Changer continues to cycle with tone arm dropping on to record every cycle.	(a) The operating plate spring (65) may be weak or detached; if weak, replace it. (b) Check for binding of the trip pawl.
14. Changer fails to switch off after tone arm has played last record and returned to rest.	(a) Check to see that the leads from AC switch are not tangled in switch slide. (b) Check for faulty AC switch. (c) Cut-off lever may be tight; move back and forth several times. (d) Cut-off lever spring (128) weak or detached.
15. Tone arm does not locate on tone arm rest.	(a) Toggle (60) loading too light, replace "C" washer (61)
16. Noise during playing of record.	(a) Motor rumble — check the motor rubber mounting, motor should be freely suspended on them. (b) Defective turntable bearings — check for dirt in bearings or on thrust washer (5,7) look for binding between balls and ball cage. Grease ball race (6) and lubricate. Turntable bearing (10) with light mineral oil. (c) Defective idler wheel (41). (d) Squeaking sounds indicate lack of oil. Lubricate.
17. Tone arm strikes underside of record on spindle ledge when it rises.	(a) Tone arm height not adjusted properly (see adjustments).
18. Distortion of recorded sound.	(a) Defective record. (b) Faulty cartridge. (c) Dust on cartridge.
19. No sound during playing.	(a) Defective cartridge. (b) Check tone arm leads for open or short circuit. (c) Cartridge leads may be too tight.

## M-60A RECORD CHANGER PARTS LIST

All Other Parts Same As M-60

Item	Description	Part No.
15 & 16	Escutcheon	325-0125-154
17 & 106	Escutcheon Pin	325-0125-155

## NEEDLE AND CARTRIDGE CHART

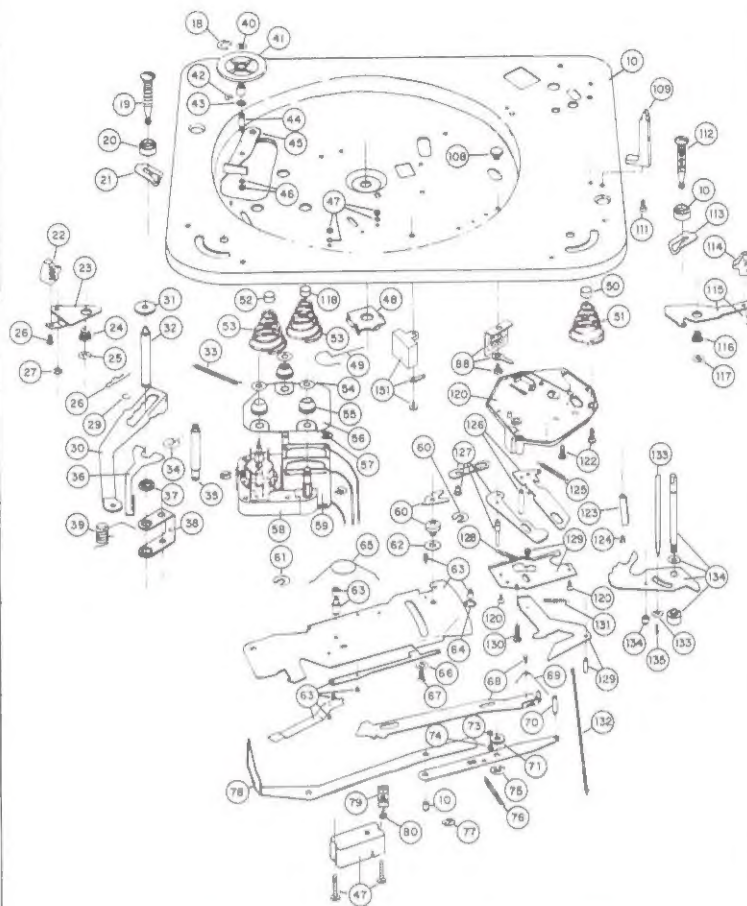
MODEL NO.	CARTRIDGE & NEEDLE ASSY.	SP NEEDLE	LP NEEDLE
K-1422	325-8072	325-8238	325-8244
K-1633	325-8067		
K-1633X	325-8067		
M-60A (BSR-U .A24)	325-8072	325-8238*	325-8244*
<p>*For needles used in original cartridge, TC8S, order the following; SP needle - 325-8143, LP needle - 325-8253.            NOTE: For models not listed above, refer to the service manual covering particular phonograph model.</p>			

## TROUBLE SHOOTING CHART

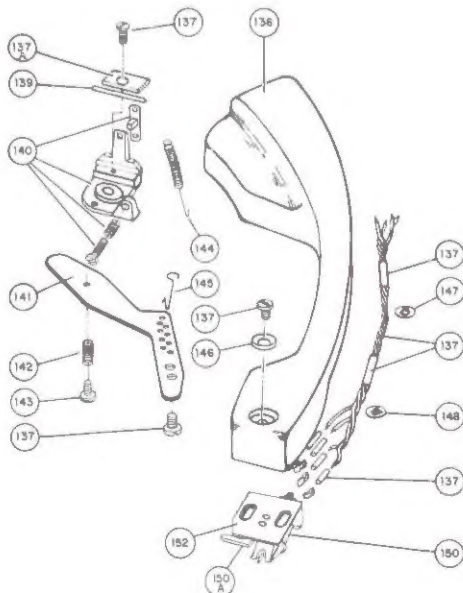
Symptom	Possible Correction
1. When lever is turned to on position turntable does not revolve.	(a) Check AC leads to changer to see if current is reaching motor. (b) Check the switch box (47) (c) Check wiring to and from switch box. (d) Check Motor (58). (e) Drive wheel slipping (41).
2. Turntable revolves when turned on but tone arm does not move.	(a) Actuating lever (68) trapped under friction link. Revolve gear (11) by hand to free lever.
3. Turntable speed too slow.	(a) Motor bearings may be too tight, tap the side of the motor to free self-aligning bearings. (b) Check turntable bearings (4) for freedom. (c) Remove turntable, clean off foreign matter and lubricate with light mineral oil. (d) Check raising pillar (32) to see it is free in raising bracket (38). (e) Check that end of idler arm (45) is not jammed on unit plate.
4. Turntable stops in middle of changing cycle.	(a) Idler wheel may be slipping, clean the inside rim of the turntable and the rubber tire of the idler wheel (41) to ensure that they are free from oil and grit. (b) Check tension of idler wheel spring.
5. Tone arm fails to move in to play last record tone arm returns to rest and changer switches off.	(a) Control lever (126) may be sticking. (b) Control lever spring (125) may be strained.
6. Record drops, tone arm moves on to record and changer shuts off.	(a) Control lever (126) and cut-off lever (127) may be overlapping.
7. Two records drop together.	(a) Hole in record too large. (b) Record keeper not fully down. (c) Record control arm (85) not holding records level.
8. Record does not drop when changer cycles.	(a) Check record feed lever (1) if bent replace entire spindle.



## REPLACEMENT PARTS LIST — MODEL M-60



**FIGURE 5. COMPONENT BREAKDOWN  
BELOW BASEPLATE**



**FIGURE 6. TONE ARM ASSEMBLY**

Item No.	Description	Part No.
76	Spring (transfer lever)	325-0125-75
77	"C" Washer	325-0125-76
78	Switch Lever	325-0125-77
79	Cable Clamp	Pt. of Main Assy.
80	Screw, 6-20 x 1/4"	*
85	Control Arm Assy.	325-0125-83
86	Selector Cover	325-0125-84
87	Rubber Washer	Pt. of Main Assy.
88	Audio Socket & Bracket Assy.	35-8001-59
89	Selector Unit Assy.	325-0125-86
90	Trip Arm Assy.	325-0125-87
91	Spring (Trip Arm)	325-0125-88
92	Spring (selector lever)	325-0125-89
93	"C" Washer	325-0125-11
94	Spring (selector arm)	325-0125-91
95	Selector Arm	325-0125-92
96	"C" Washer	325-0125-93
97	Control Pin	325-0125-94
98	"C" Washer	325-0125-29
99	Tone Arm Spindle Nut	325-0125-96
100	Tone Arm Overload Spring	325-0125-97
101	Tone Arm Adjuster	325-0125-98
102	Tone Arm Overload Plate	325-0125-99
103	Tone Arm Adjuster Spring	325-0125-100
104	"C" Washer	325-0125-76
105	Selector Housing	325-0125-102
106	Escutcheon Pin	Pt. of Main Assy.
107	"C" Washer	Pt. of Main Assy.
108	Rivet Transfer Lever	325-0125-106
109	Tone Arm Rest	325-0125-107
111	Screw, 8-18 x 1/2"	*
112	Transit Screw	Pt. of Main Assy.
113	Retaining Clip	325-0125-22
114	Knob	325-0125-112
115	Reject Lever Assy.	325-0125-113
116	Knob, spindle	325-0125-114
117	"C" Washer	325-0125-26
118	Spring mtg. cup	325-0125-50
119	Spring Unit Mtg.	325-0125-51
120	Support Casting Assy.	325-0125-118
122	Screw, 6-20 x 3/8" (2)	*
123	Leaf Spring	325-0125-120
124	Screw, 4-24 x 3/16"	*
125	Spring (control lever)	325-0125-121
126	Control Lever Assy.	325-0125-122
127	Cut-off Lever Assy.	325-0125-123
128	Spring (cut-off lever)	325-0125-124
129	Retaining Plate Assy.	325-0125-126
130	Screw, 6-20 x 1/2"	*
131	Spring (switch plate)	325-0125-127
132	Reject Link	325-0125-129
133	Tone Arm Raising Spindle Assy.	325-0125-131
134	Quadrant Assy.	325-0125-133
135	Spring (tone arm raising spindle)	325-0125-135
136	Tone Arm	325-0125-136
137	Tone Arm Assy. (less cartridge)	325-0125-137
137A	Clamping Plate	325-0125-138
138	Turnover Bracket	28-13777-2
139	Pivot Pin	325-0125-139
140	Tone Arm Hinge Assy.	325-0125-140
141	Tone Arm Height Adj. Plate	325-0125-143
142	Spring	325-0125-141
143	Screw, 6BA x 3/8"	*
144	Spring (Tone Arm Balance)	325-0125-145
145	Spring (Tone Arm Securing)	325-0125-146
146	Screw Escutcheon	325-0125-147
147	Retaining Clip	325-0125-148
148	Retaining Clip	325-0125-148
150	Cartridge & Needle	325-8067
	45 RPM Spindle	325-0125-153
	Nameplate	325-0125-15
150A	Turnover Bracket, Pickup Mtg.	28-13777-2
151	AC Socket	35-8001-184
152	Pickup Adaptor Bracket	35-8006-12

\* Standard Screws — Not Stocked As A Replacement Item.

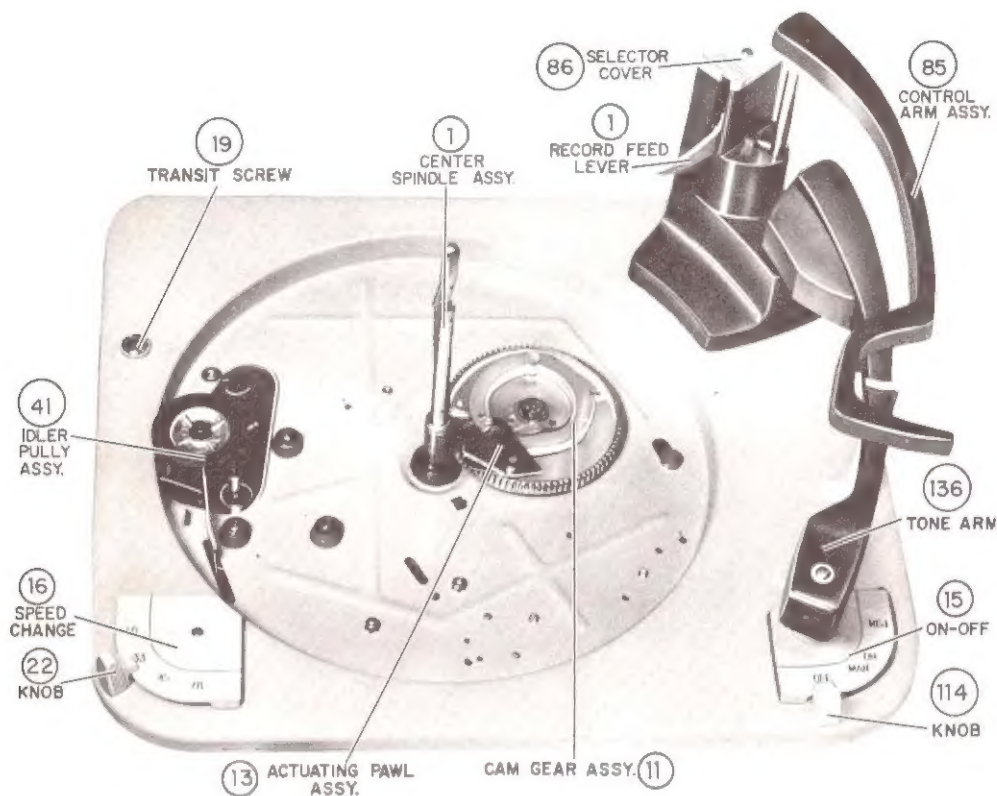


FIGURE 7. TOP VIEW OF CHANGER, TURNTABLE REMOVED

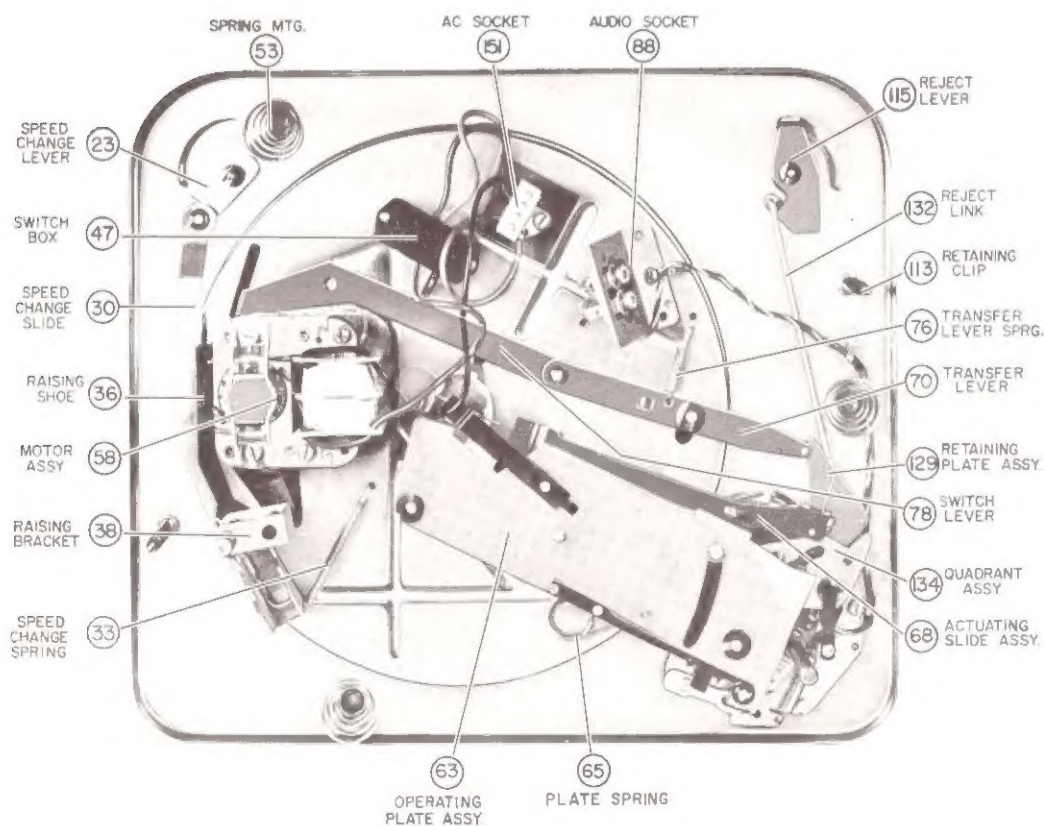


FIGURE 8. BOTTOM VIEW OF CHANGER